

*AMENDMENTS TO THE CLAIMS*

1. (Original) A metal chalcogenide composite nano-particle comprising a metal capable of forming p-type semiconducting chalcogenide nano-particles and a metal capable of forming n-type semiconducting chalcogenide nano-particles, wherein at least one of said metal chalcogenides has a band-gap between 1.0 and 2.9 eV and the concentration of said metal capable of forming p-type semiconducting chalcogenide nano-particles is at least 5 atomic percent of said metal and is less than 50 atomic percent of said metal.

2. (Currently Amended) The metal ~~Metal~~ chalcogenide composite nano-particle according to claim 1, wherein said metal chalcogenide composite nano-particle comprises a p-type semiconducting metal chalcogenide phase and a n-type semiconducting chalcogenide phase, at least one of said metal chalcogenides has a band-gap between 1.0 and 2.9 eV and the concentration of said p-type semiconducting metal chalcogenide in said metal chalcogenide composite nano-particle is at least 5 mole percent and is less than 50 mole percent.

3. (Currently Amended) The metal ~~Metal~~ chalcogenide composite nano-particle according to claim 1, wherein said metal chalcogenide composite particle is a coprecipitated particle.

4. (Currently Amended) The metal ~~Metal~~ chalcogenide composite nano-particle according to claim 1, wherein said metal chalcogenide composite particle is a metal sulphide composite particle.

5. (Currently Amended) The metal ~~Metal~~ chalcogenide composite nano-particle according to claim 1, wherein said metal capable of forming n-type semiconducting chalcogenide nano-particles is selected from the group consisting of zinc, bismuth, cadmium, mercury, indium, tin, tantalum and titanium.

6. (Currently Amended) The metal ~~Metal~~ chalcogenide composite nano-particle according to claim 1, wherein said metal capable of forming p-type semiconducting chalcogenide nano-particles is selected from the group consisting of copper, chromium, iron, lead and nickel.

7. (Currently Amended) ~~The metal Metal~~ chalcogenide composite nano-particle according to claim 1, wherein said metal chalcogenide composite particle further ~~contains~~ comprises a metal capable of forming spectrally sensitizing chalcogenide nano-particles with a band-gap between 1.0 and 2.9 eV.

8. (Currently Amended) ~~The metal Metal~~ chalcogenide composite nano-particle according to claim 7, wherein said metal capable of forming spectrally sensitizing chalcogenide nano-particles is selected from the group consisting of silver, lead, copper, bismuth, vanadium and cadmium.

9. (Currently Amended) ~~The metal Metal~~ chalcogenide composite nano-particle according to claim 1, wherein a stoichiometric deficit of the chalcogenide in said metal chalcogenide composite nano-particle is present.

10. (Original) A dispersion comprising a metal chalcogenide composite nano-particle comprising a metal capable of forming p-type semiconducting chalcogenide nano-particles and a metal capable of forming n-type semiconducting chalcogenide nano-particles, wherein at least one of said metal chalcogenides has a band-gap between 1.0 and 2.9 eV and the concentration of said metal capable of forming p-type semiconducting chalcogenide nano-particles is at least 5 atomic percent of said metal and is less than 50 atomic percent of said metal.

11. (Original) A process for preparing a dispersion comprising a metal chalcogenide composite nano-particle comprising a metal capable of forming p-type semiconducting chalcogenide nano-particles and a metal capable of forming n-type semiconducting chalcogenide nano-particles, wherein at least one of said metal chalcogenides has a band-gap between 1.0 and 2.9 eV and the concentration of said metal capable of forming p-type semiconducting chalcogenide nano-particles is at least 5 atomic percent of said metal and is less than 50 atomic percent of said metal, comprising the steps of preparing a composite metal chalcogenide nano-particle containing an .n-type semiconducting chalcogenide and a p-type semiconducting p-type semiconducting chalcogenide, wherein at least one of said metal chalcogenides has a band-gap between 1.0 and 2.9 eV.

12. (Currently Amended) The process ~~Process~~ according to -claim 11, wherein said process further includes a coprecipitation step, a metal ion conversion step and/or a sintering step.

13. (Currently Amended) The process ~~Process~~ according to claim 11, wherein said coprecipitation is carried out in a medium containing at least one compound selected from the group consisting of thiols, triazole compounds and diazole compounds.

14. (Currently Amended) The process ~~Process~~ according to claim 11, wherein said process includes the step of mixing said metal chalcogenide composite nano-particles with spectrally sensitizing chalcogenide nano-particles with a band-gap between 1.0 and 2.9 eV.

15. (Currently Amended) The process ~~Process~~ according to claim 11, wherein said process comprises the step of converting said metal chalcogenide composite nano-particles with metal ions.

16. (Currently Amended) The process ~~Process~~ according to claim 11, wherein said process further ~~includes~~ comprises a diafiltration process step.

17. (Currently Amended) The process ~~Process~~ according to claim 16, wherein the washing medium in said diafiltration process ~~contains~~ comprises a phosphoric acid or a phosphoric acid salt.

18. (Original) A layer comprising metal chalcogenide composite nano-particles comprising a metal capable of forming p-type semiconducting chalcogenide nano-particles and a metal capable of forming n-type semiconducting chalcogenide nano-particles, wherein at least one of said metal chalcogenides has a band-gap between 1.0 and 2.9 eV and the concentration of said metal capable of forming p-type semiconducting chalcogenide nano-particles is at least 5 atomic percent of said metal and is less than 50 atomic percent of said metal.

19. (Currently Amended) The layer ~~Layer~~ according to claim 18, wherein said layer further contains at least one spectral sensitizer for said metal chalcogenide composite nano-particles.

20. (Currently Amended) ~~The layer~~ Layer according to claim 19, wherein said at least one spectral sensitizer is selected from the group consisting of metal chalcogenide nano-particles with a band-gap between 1.0 and 2.9 eV, organic dyes, and metallo-organic dyes.

21. (Currently Amended) ~~The layer~~ Layer according to claim 18, wherein said layer further ~~contains~~ comprises a binder.

22. (Currently Amended) ~~The layer~~ Layer according to claim 21, wherein said binder is poly(vinyl pyrrolidone).

23. (Original) A photovoltaic device comprising a layer comprising metal chalcogenide composite nano-particles comprising a metal capable of forming p-type semiconducting chalcogenide nano-particles and a metal capable of forming n-type semiconducting chalcogenide nano-particles, wherein at least one of said metal chalcogenides has a band-gap between 1.0 and 2.9 eV and the concentration of said metal capable of forming p-type semiconducting chalcogenide nano-particles is at least 5 atomic percent of said metal and is less than 50 atomic percent of said metal.

24. (Currently Amended) A process for using a metal chalcogenide composite nano-particle comprising a metal capable of forming p-type semiconducting chalcogenide nano-particles and a metal capable of forming n-type semiconducting chalcogenide nano-particles, wherein at least one of said metal chalcogenides has a band-gap between 1.0 and 2.9 eV and the concentration of said metal capable of forming p-type semiconducting chalcogenide nano-particles is at least 5 atomic percent of said metal and is less than 50 atomic percent of said metal, and wherein said metal chalcogenide composite nano-particle is a component in a photovoltaic device.

This listing of claims replaces all prior versions, and listings, of claims in the application.